laborious process, which gives rise to beautiful crystals with a coppery red sheen, and which are a very complex oxalate. Under certain circumstances the pale yellow crystals of the normal platoxalate are obtained. Vèzes finds that when the chlorplatinite of potassium is heated with neutral potassium oxalate in a *neutral* solution the platoxalate of potassium is very readily formed with no admixture of more complex compounds. An analogous reaction produces the normal palladoxalates.

A PRACTICAL application of this reaction is made in Vèzes' second paper. With the exception of chlorplatinic acid, potassium chlorplatinite is doubtless the most used platinum compound, being the starting point for all the platinum-ammonium bases. Up to this time no method of its manufacture can be considered satisfactory, especially upon a commercial scale. The reduction of chlorplatinic acid by sulfur dioxid must be very carefully carried out or complex sulfoplatinites result; heating platinic chlorid till two atoms of chlorin are given off is difficult to accomplish with anything like quantitative precision; and the reduction with cuprous chlorid gives a product very difficult to free from all traces of copper. Vèzes suggests the use of oxalic acid in neutral solution. If potassium chlorplatinate (and most platinum residues are of this compound) is boiled with the theoretical quantity—37%—of neutral potassium oxalate in water insufficient to dissolve the platinum salt, in the course of several hours it is quantitatively converted into the chlorplatinite, most of which crystallizes out on cooling and all of which may be recovered by adding alcohol. This operation can be successfully carried out on a large scale. Since the publication of Vèzes' article the method has been tested in the Washington and Lee University laboratory, and I can bear testimony to its success and its great advantage over the earlier methods.

VÈZES' third paper is on the criticism of Dumas on Stas' determination of the atomic mass of nitrogen. Dumas showed the presence of oxygen in silver which has been fused, and calculated that the figure of Stas should be reduced from 14.044 to 14.002, a variation greater than that of experimental error. Vèzes has gone over the calculations, using Stas' original figures and introducing the correction for occluded oxygen, and shows that the original figure of Stas would be reduced from 14.044 only to 14.040, a change far less than the limit of experimental error. Another testimony is thus borne to the wonderfully accurate work of the Belgian chemist.

J. L. H.

BOTANICAL NOTES.

A STUDY OF TOADSTOOLS.

MR. C. G. LLOYD, of Cincinnati, an enthusiastic student of the larger fungi has recently brought out an illustrated paper ('A Compilation of the Volvæ of the United States') which deals with the species of two genera of toadstools, viz.: *Amanita*, with thirty-eight species, and *Volvaria*, with twelve. Nine 'half-tone' reproductions of photographs illustrate the paper. These toadstools are characterized by the young plants being enclosed in a thick membrane, called a volva, and having a soft and fleshy structure, with entire, thin, sharp gills, which do not deliquesce. Some of the species are edible, but so many are poisonous that the author says: "My advice is, Don't eat any Amanitas, and you will make no mistake."

A SOUTHERN FERN FAR FROM HOME.

FOR some time rumors of the occurrence of the Southern Maidenhair Fern (*Adiantum capillus-veneris*) in the Black Hills of southwestern South Dakota have drifted to the Botanical Department of the University of

Nebraska. Their occurrence so far north seemed so unlikely that at first little attention was given to these rumors. At length specimens of this fern were received which were said to have grown wild at Cascade, in the edge of the Black Hills. A personal investigation was the only thing which could settle the matter, for it still seemed very likely that some mistake had been made, and that the specimens received had come from some more southern station. Accordingly I visited the locality August 24, 1898, in company with Dr. F. E. Clements, and we were astonished to find this fern in great abundance along the banks of Cascade Creek. This stream is a couple of metres wide and twenty to thirty centimetres deep, and is fed by several large springs of warm water, having a temperature of about 26° Cent. We very carefully examined the locality and satisfied ourselves that this fern is indigenous and that it has not been introduced by human agency. Since this discovery I have seen specimens of the same species collected at Cascade in 1892, and a fragment collected in 1890 at Hot Springs, ten miles distant, along the banks of Fall Creek, another warm stream. Mrs. Alice M. Crary, a keen observer who has lived many years in the Black Hills, assures me that they grew abundantly along Fall Creek at Hot Springs, 'before that place was settled.'' All this tends to corroborate our conclusion that these ferns were not transplanted by human agency, and that we have here a curious problem in the distribution of a species.

THE FUNCTION OF BLOOM.

As is well known to botanists but not so well known to the general public, the white powdery coating on some leaves and fruits is waxy in nature and is called 'bloom' in technical works on Botany. Its function has received some attention, Mr. Darwin having made it the object of some studies in his later years. In a recent number of the *Laboratory Bulletin*, of Oberlin College, along with papers by the lamented Professor H. L. Jones, is a short one by his assistant, Miss Roberta Reynolds, giving the results of a series of experiments which show that when the bloom is removed from the epidermis the transpiration of water is greatly increased. Thus in case of *Agave utahensis* the loss was about two and a-half times as much from the leaf which was without bloom as from that with the bloom. With *Echeveria peacockii* it was two and a-third times as much; with *Agave verschaffelti* one and four-tenths; *Agave americana* about two and a-half; an undetermined *Agave*, two times as much; two unnamed species of *Cotyledon*, about one and one-third. It was observed, also, that on damp days the difference between the leaves was less than on dry days; so, too, there was less difference in the case of young leaves than when old ones were used.

A TINY PINE TREE.

Last summer I climbed Green Mountain, near Boulder, Colorado, and found growing from a crevice in one of the rocks at the summit a small tree of *Pinus albicaulis* Engelm., about thirteen centimeters high and five millimeters in diameter. It was unbranched, and bore a single, terminal tuft of leaves. And yet this tiny tree, when carefully examined, was found to have twenty-five distinct annual rings. I know of no other case of natural dwarfing carried to such an extreme, and, therefore, place this one on record.

Charles E. Bessey.
The University of Nebraska.

CURRENT NOTES ON ANTHROPOLOGY.

BOTANICAL KNOWLEDGE OF THE ANCIENT AZTECS.

Students of ancient Mexico are acquainted with the work of Dr. Hernandez, who was sent by Philip II. to study the plants and